1. Amendments to the Claims:

A listing of the entire set of pending claims (including amendments to the claims, if any) is submitted herewith per 37 CFR § 1.121. This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Previously presented) A method for correcting impairments on information, passing through an information transmission system, imposed by a plurality of defective elements of the information transmission system for generating, transporting, and receiving the information, the method comprising:

identifying the defective elements imposing impairments on the information and characterizing each defect by performing a frequency analysis of each defective element;

determining a frequency characteristic complementary to said frequency analysis, such that a combination of said frequency analysis and said complementary frequency characteristic, when applied to information passing through said element, corrects the impairment imposed by said element; and

creating a composite, two channel I and Q finite impulse response filter, having I-I and Q-Q direct components and I-Q and Q-I cross components, by combining said complementary frequency characteristics, said filter being positioned in said information transmission system for correcting said impairments imposed on the information by said defective elements.

2. (Previously presented) The method of claim 1, wherein said system is a data receiver and said plurality of elements include an IF filter, a two-channel down-converter, and I and Q data processing channels.

3. (Currently amended) The method of claim 1, wherein said system is ~~to~~ a data

generator and said plurality of elements include I and Q data channels, a two-channel up-converting modulator, and an IF filter.

4. (Canceled)

5. (Previously presented) The method of claim 1, wherein:

creating a composite, two channel I and Q finite impulse response filter includes arranging said direct and said cross components as terms of a set of 2x2 matrices.

6 - 11. (Canceled)

12. (Previously Presented) In applying a generalized two-channel digital filter to process an input data stream x and to produce an output data stream y, wherein both x and y are two-component signals x_I, x_Q, y_I, and y_Q which are processed in blocks of N/2 data values long, N being a power of 2, and wherein the filter is characterized by four independent impulse response vectors h_{11}, h_{12}, h_{21}, and h_{22}, each vector of length N/2, a method for efficiently computing said output data stream y, comprising the preliminary steps of:

a) forming the vectors

$$a = \frac{(h_{11} + h_{22}) + j(h_{21} - h_{12})}{2} \quad \text{and} \quad b = \frac{(h_{11} - h_{22}) + j(h_{21} + h_{12})}{2}$$

b) appending N/2 zeros to each vector and performing an FFT on each vector to produce A_k and B_k, respectively; and, for each block of N/2 data values in said input data stream x, additionally comprising the iterative steps of:

c) moving the previous block of input data values to the first half of an input vector x_N of length N and loading the current block of input data values into the second half of said input vector x_N;

d) treating x_N as a vector of complex numbers of the form $x_I + jx_Q$, and

performing a N-point FFT to produce X_k;

e) computing the complex vector $Y_k = A_k X_k + B_k X_{N-k}$, $0 \leq k < N/2$, and performing an inverse FFT on the result to produce the complex vector y_n;

f) designating the second half of y_n as the N/2 output samples of the current iteration, according to y_{In} = Real (y_Q), y_n = Imag (y_n), where $N/2 \leq n < N$; and

g) returning to step (c) for the next block of N/2 data values.